

Montgomery County Fire and Rescue Service Performance Review

Richard Bowers, Fire Chief
May 14, 2010

CountyStat Principles

- **Require Data-Driven Performance**
- **Promote Strategic Governance**
- **Increase Government Transparency**
- **Foster a Culture of Accountability**



Agenda

- **Welcome and Introductions**
- **Follow-Up Item Status Update**
- **Annual Headline Measure Performance Update**
- **Discussion of National Institute of Standards and Technology (NIST) Report on Residential Field Experiments and the Use of Four-Person Staffing in Montgomery County**
- **Wrap-Up and Follow-Up Items**



Tracking Our Progress

■ Meeting Goals:

- Determine the impact of MCFRS programs and activities on headline measures and establish new performance expectations and goals
- Review ongoing departmental data collection efforts and discuss future projects that will further incorporate data into the decision making process

■ How will we measure success

- Updated performance plan is finalized and published to the web
- Ongoing monitoring of performance through Montgomery County Performance Dashboard



Follow Up Items In Progress

- **Create a system to determine and track causes for fires that are not confined to the room of origin in order to develop appropriate responses that improve performance.**

**In
Progress**

- The Office of the Fire Marshal (OFM) is working on this initiative
- OFM has established a team that will analyze each significant structure fire that was not confined to the room of origin
- Factors to be examined will include: type of construction, fire load, cause and origin, fire growth and behavior, length of time between ignition and reporting of the fire to 9-1-1 by occupants or central monitoring company, total MCFRS response time, time between MCFRS arrival on scene and initiation of fire suppression, time to control the fire, suppression tactics employed, reasons for casualties (if any), and measures that could be taken to prevent or minimize the outcomes of similar incidents.

- **Develop a fire prevention performance measure**

**In
Progress**

- Currently looking to develop a survey of most at-risk residents
- Low-cost web-based survey tools are not effective at gathering information from at risk populations
- Current fiscal situation does not allow for the development of a directly administered survey involving at-risk populations. MCFRS is examining alternative data collection methods such as working with Meals on Wheels.



Headline Measures

Percent of Residential Structure Fires Confined to the Room of Origin

Response Time to Critical Calls

- Percentage of Advanced Life Support (ALS) Incidents with First Arriving ALS Unit within 8 Minutes
- Percentage of Structure Fires with First Arriving Engine within 6 Minutes

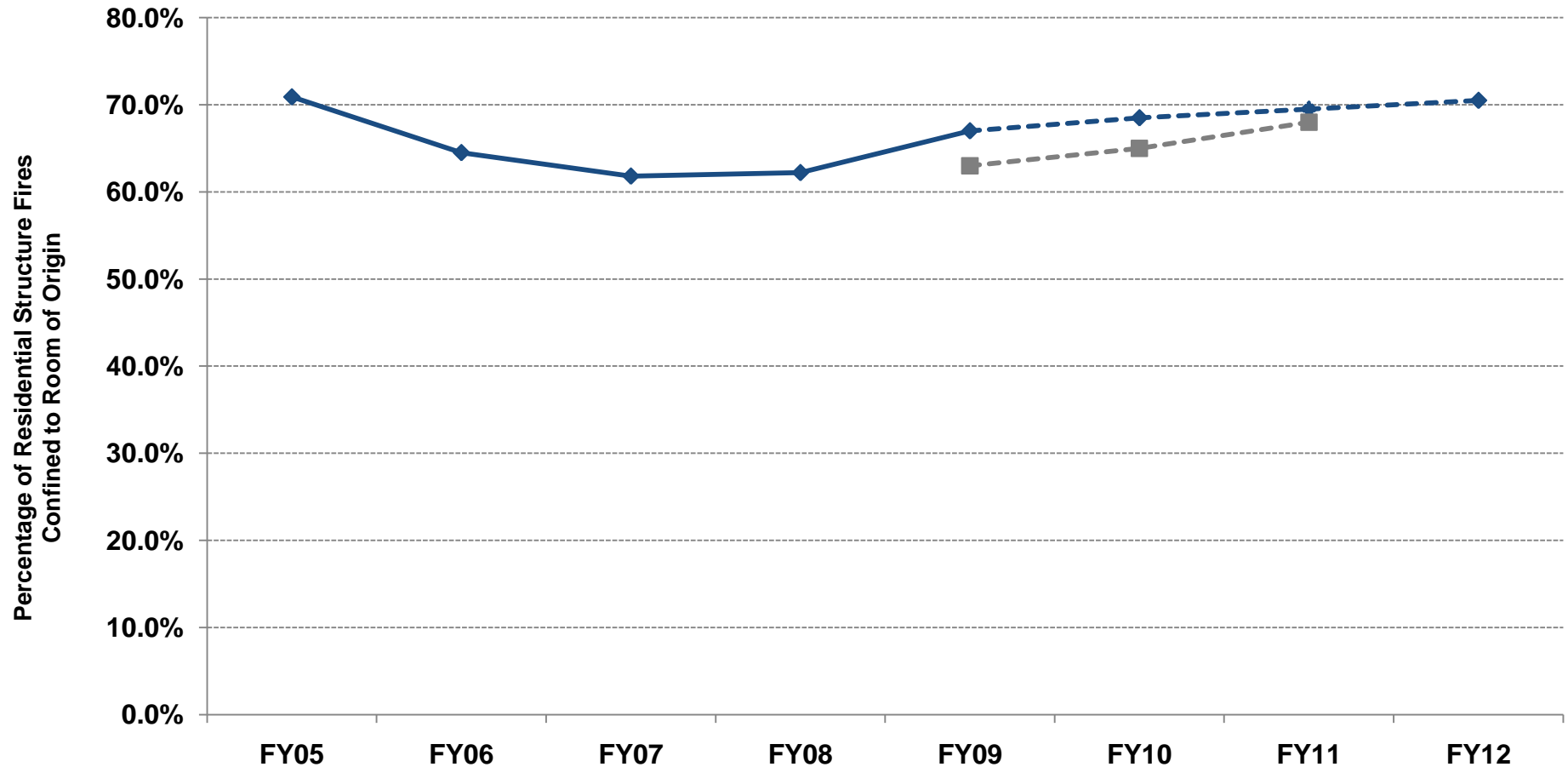
Number of Residential Fire Deaths and Injuries

Percentage of Accreditation Related Strategic Recommendations Addressed

Emergency Medical Services Performance - Heart Attack Care



Headline Measure #1: Percent of Residential Structure Fires Confined to the Room of Origin



■ = FY10 Budget Projections



Headline Measure #1: Percent of Residential Structure Fires Confined to the Room of Origin

FY05	FY06	FY07	FY08	FY09	FY10	FY11	FY12
70.9%	64.5%	61.8%	62%	67%	68.5%	69.5%	70.5%
FY10 Budget Projections				63%	65%	68%	-

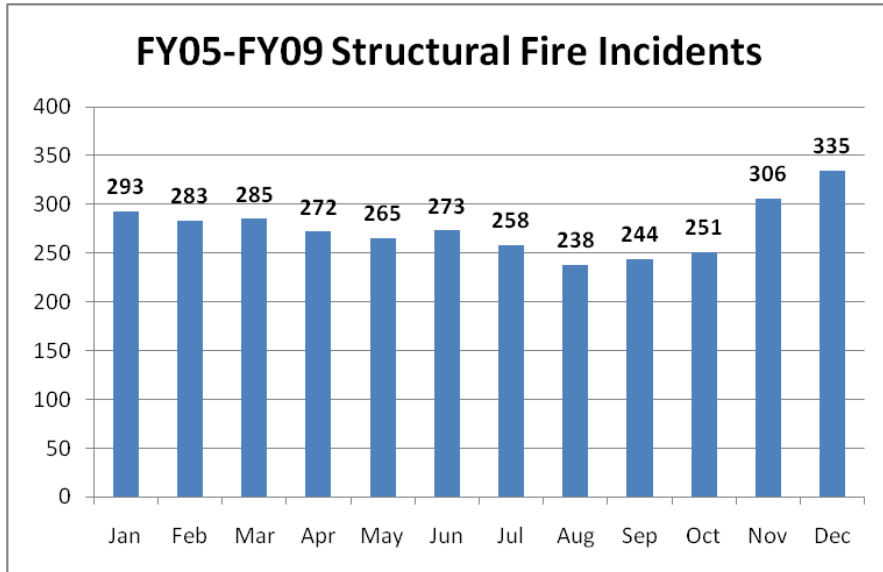
FY10 Performance Progress

FY10		
Q1	Q2	Q3
96%	82.9%	78.1%

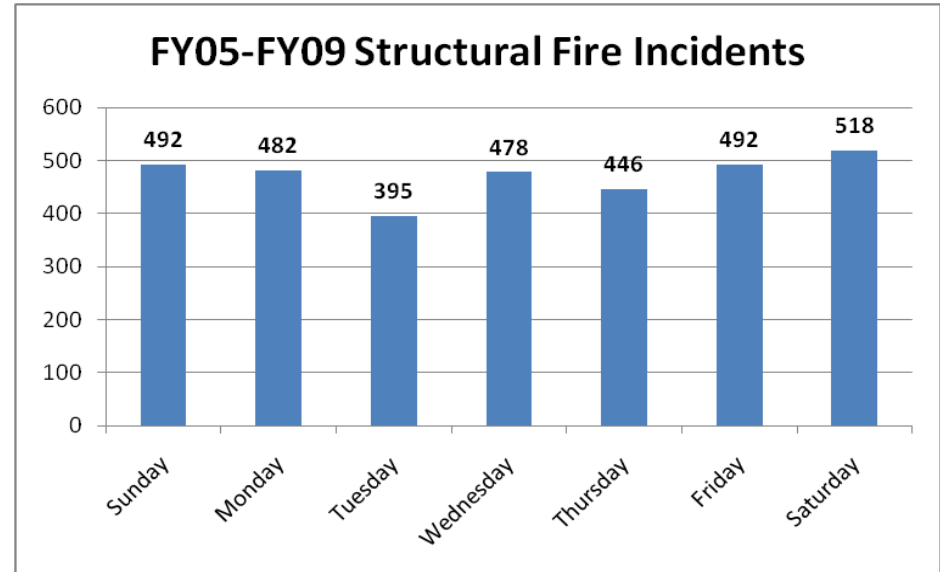


Structural Fires: Snapshot Of Montgomery County Frequency

Structural Fire Incidents By Month



Structural Fire Incidents By Day of Week



Structural Fire Incidents By Fiscal Year

FY05	FY06	FY07	FY08	FY09
684	650	663	662	644



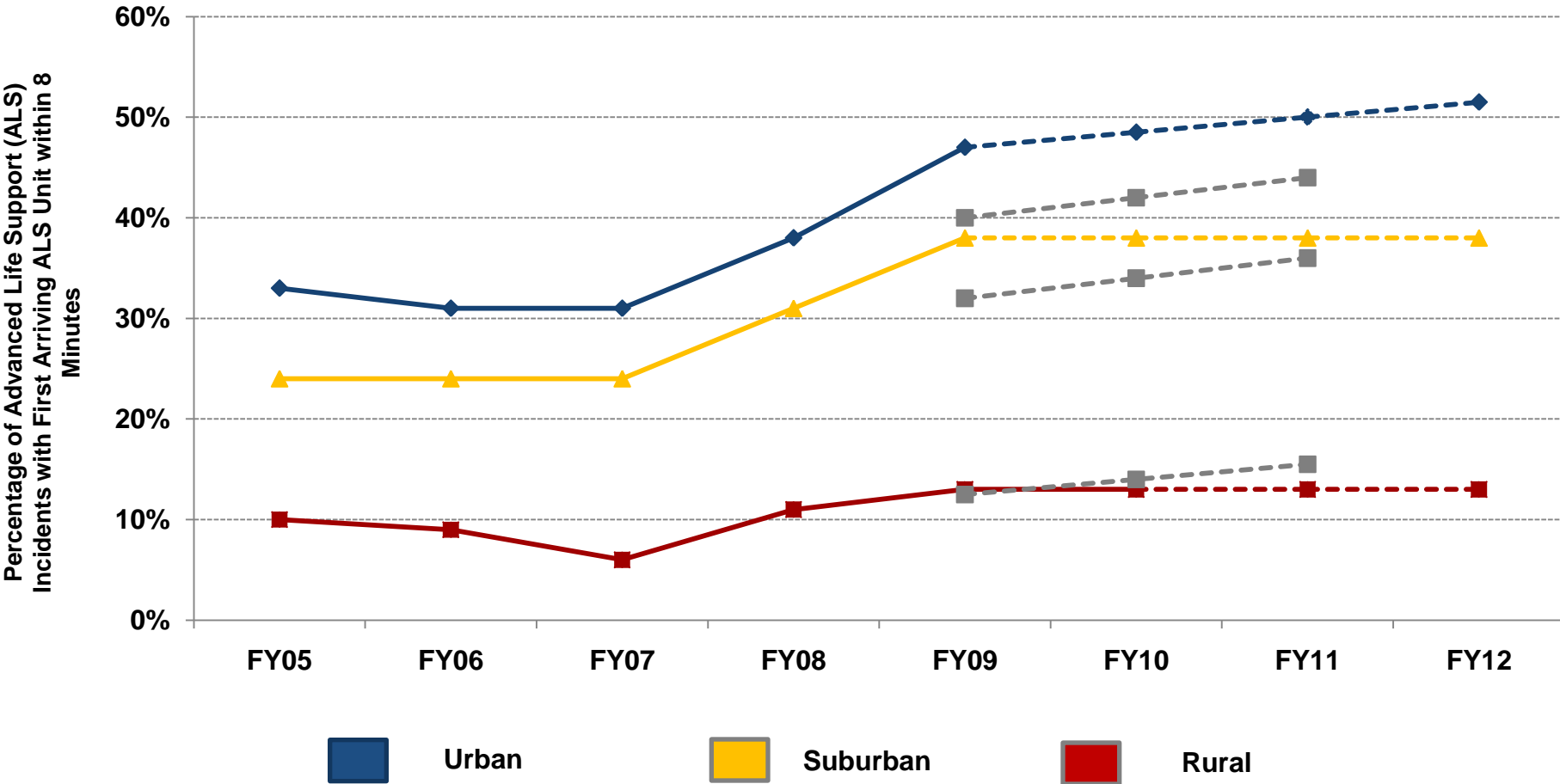
Structural Fires: Count of Incidents Where Sprinkler System Activated

Fiscal Year	No Sprinkler Activation	Sprinkler Activation	Total	% w/ Sprinkler Activation
FY05	653	31	684	4.5%
FY06	598	52	650	8.0%
FY07	624	39	663	5.9%
FY08	627	35	662	5.3%
FY09	592	52	644	8.1%
Grand Total	3094	209	3303	6.3%

Use Category	No Sprinkler Activation	Sprinkler Activation	Total	% w/ Sprinkler Activation
Commercial	171	59	230	25.7%
Industrial	85	10	95	10.5%
Other Structures	13		13	0.0%
Outdoor Space	37		37	0.0%
Parking	22		22	0.0%
Residential	1382	32	1414	2.3%
Residential-multi	753	93	846	11.0%
School	42	7	49	14.3%
Unreported	589	8	597	1.3%
Grand Total	3094	209	3303	6.3%



Headline Measure #2: Response Time to Critical Calls: Percentage of Advanced Life Support (ALS) Incidents with First Arriving ALS Unit within 8 Minutes



■ = FY10 Budget Projections



Headline Measure #2: Response Time to Critical Calls: Percentage of Advanced Life Support (ALS) Incidents with First Arriving ALS Unit within 8 Minutes

	FY05	FY06	FY07	FY08	FY09	FY10	FY11	FY12
Urban	33%	31%	31%	38%	47%	48.5%	50%	51.5%
FY10 Projections					40%	42%	44%	-
Suburban	24%	24%	24%	31%	38%	34%	33%	33%
FY10 Projections					32%	34%	36%	-
Rural	10%	9%	6%	11%	13%	14%	12%	12%
FY10 Projections					12.5%	14%	15.5%	-

FY10 Performance Progress

	FY10		
	Q1	Q2	Q3
Urban	47%	45%	43%
Suburban	34%	34%	33%
Rural	10%	14%	11%



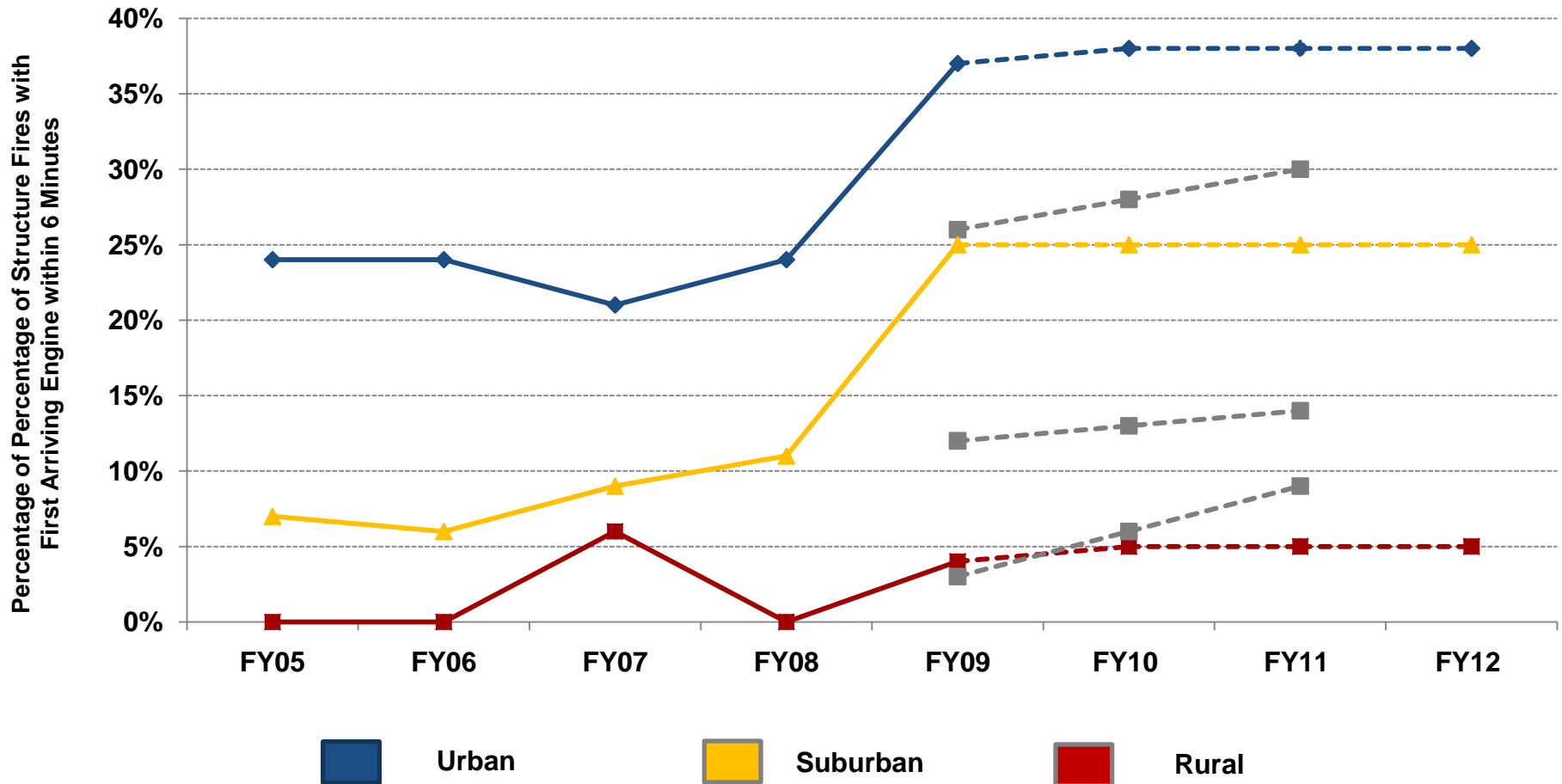
Supporting Measure: Average Response Time to Advanced Life Support (ALS) Incidents

	09Q4	10Q1	10Q2	10Q3
Urban	8.5 min	8.6 min	8.7 min	8.8 min
Suburban	9.3 min	9.5 min	9.4 min	9.8 min
Rural	10.9 min	11.5 min	11.8 min	11.6 min

In Q4 FY2009, MCFRS started collecting and reporting data on the average response time to Advanced Life Support (ALS) Incidents



Headline Measure #2: Response Time to Critical Calls: Percentage of Structure Fires with First Arriving Engine within 6 Minutes



■ = FY10 Budget Projections



Headline Measure #2: Response Time to Critical Calls: Percentage of Structure Fires with First Arriving Engine within 6 Minutes

	FY05	FY06	FY07	FY08	FY09	FY10	FY11	FY12
Urban	24%	24%	21%	24%	37%	38%	40%	40%
FY10 Budget Projections					26%	28%	30%	
Suburban	7%	6%	9%	11%	25%	17%	16%	16%
FY10 Budget Projections					12%	13%	14%	
Rural	0%	0%	6%	0%	4%	5%	6%	7%
FY10 Budget Projections					3%	6%	9%	

FY10 Performance Progress

	FY10		
	Q1	Q2	Q3
Urban	37%	43%	43%
Suburban	35%	17%	23%
Rural	NA	0%	17%



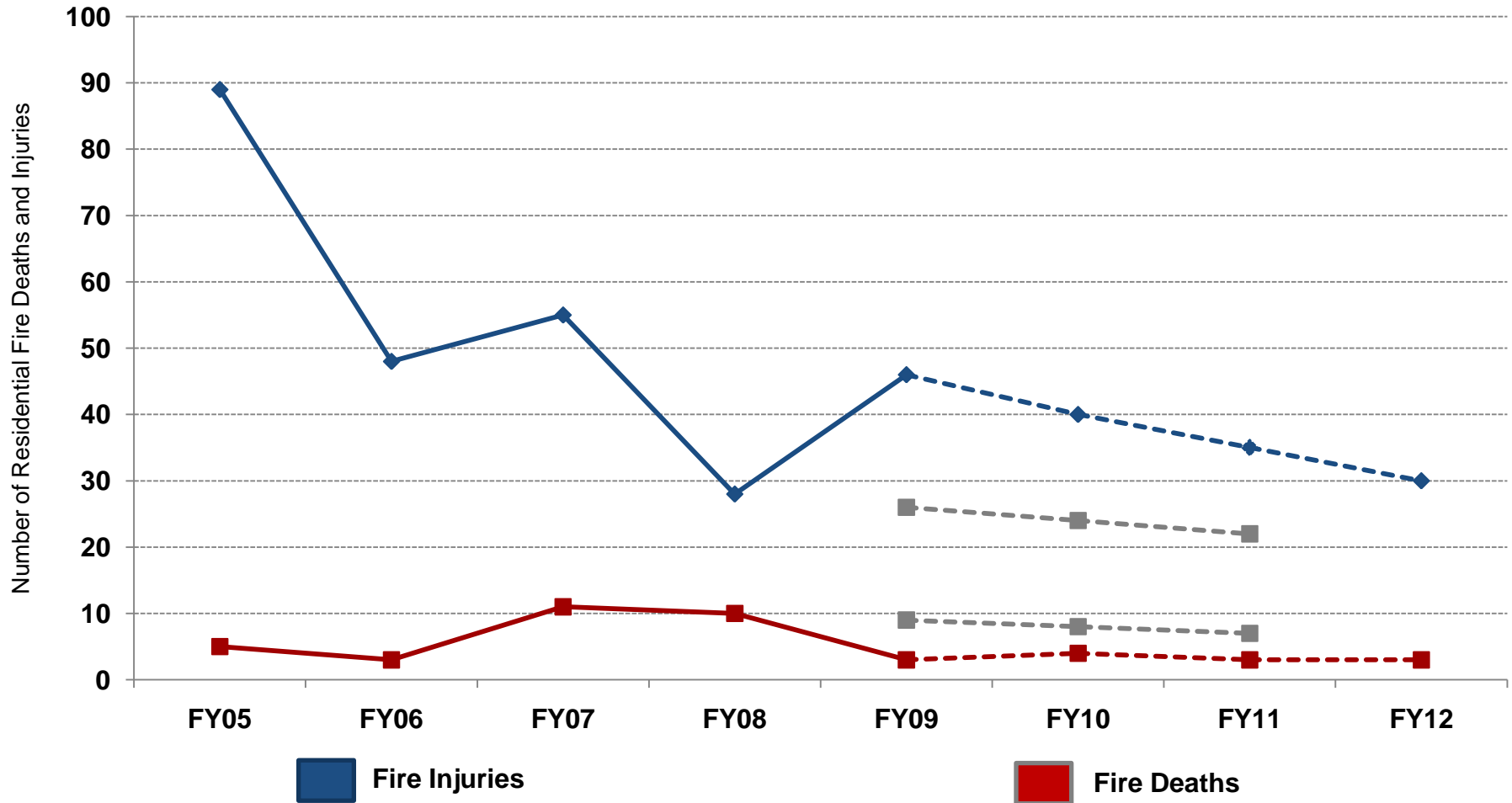
Supporting Measure: Average Response Time to Structural Fire Incidents

	09Q4	10Q1	10Q2	10Q3
Urban	7.2 min	7.1 min	6.8 min	6.7 min
Suburban	8 min	8.2 min	8.5 min	7.7 min
Rural	7.9 min	NA	13.4 min	9.6 min

In Q4 FY2009, MCFRS started collecting and reporting data on the average response time to structural fire incidents



Headline Measure #3: Number of Residential Fire Deaths and Injuries



Headline Measure #3: Number of Residential Fire Deaths and Injuries

	FY05	FY06	FY07	FY08	FY09	FY10	FY11	FY12
Injuries	89	48	55	28	46	40	35	30
FY10 Budget Projections					26	24	22	-
Deaths	5	3	11	10	3	4	3	3
FY10 Budget Projections					9	8	7	-

FY10 Performance Progress

	FY10		
	Q1	Q2	Q3
Injuries	15	22	32
Deaths	0	0	0



MCFRS Data: Benchmarking of Civilian Fire Casualty Results For Select Fire Departments

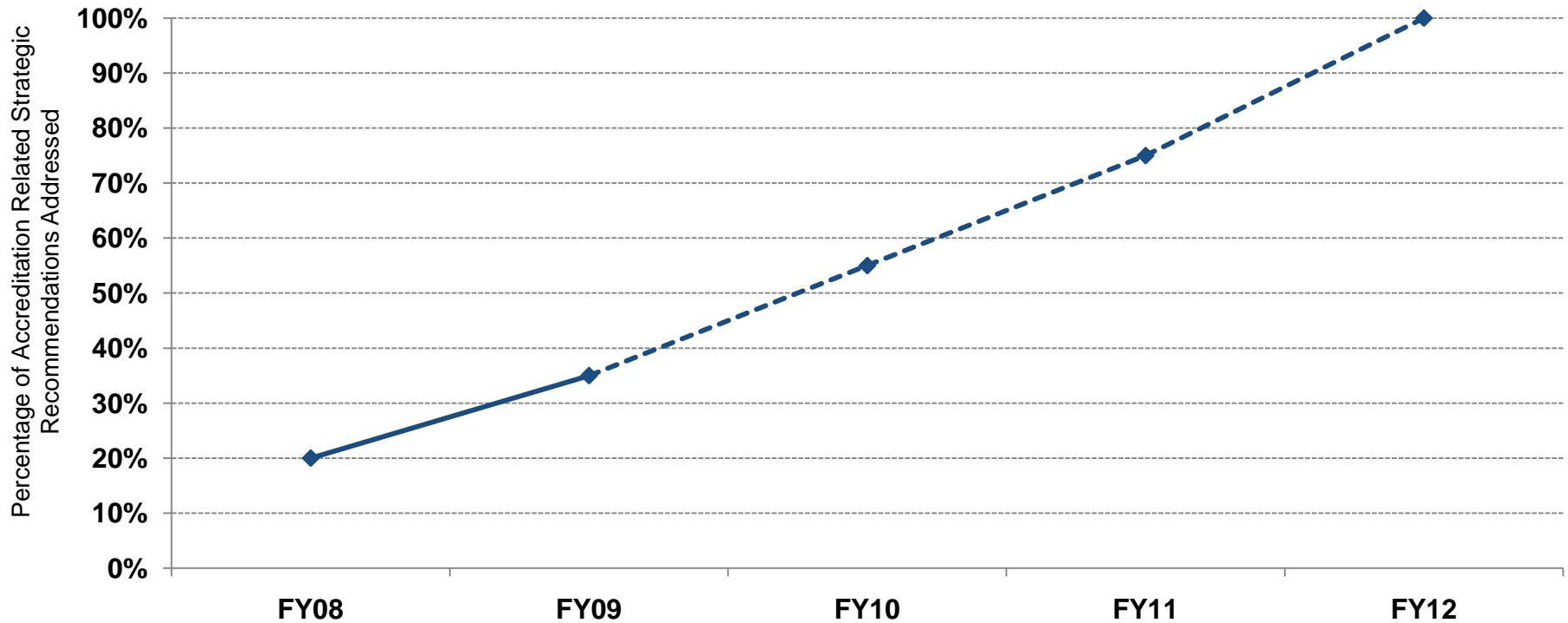
Department	2009 Pop.	Fatalities			Injuries		
		2007	2008	2009	2007	2008	2009
MCFRS	~966,000	11 (1.2)	10 (1.1)	3 (0.3)	55 (5.9)	28 (3.0)	46 (4.8)
Prince Georges	~835,000	6 (0.7)	5 (0.6)	11 (1.3)	N/A	N/A	N/A
Howard County	~275,000	3 (1.1)	0 (0.0)	1(0.3)	N/A	N/A	N/A
Baltimore County	~790,000	6 (0.8)	8 (1.0)	13 (1.7)	N/A	N/A	N/A
Anne Arundel Co.	~525,000	5 (1.0)	4 (0.8)	1 (0.2)	N/A	N/A	N/A
Frederick County	~235,000	1 (0.4)	2 (0.9)	4 (1.7)	N/A	N/A	N/A
Fairfax County, VA	~1,056,000	6 (0.6)	8 (0.8)	5 (0.5)	N/A	N/A	N/A
Greensboro, NC	~258,000	5 (2.0)	3 (1.2)	1 (0.4)	16 (6.5)	25 (9.7)	19 (7.4)
Calgary, Canada	~1066000	3 (0.3)	3 (0.3)	7 (0.7)	26 (2.6)	51 (4.9)	63 (5.9)

Note: (#) = number/100,000 population, rounded to nearest tenth

Note: Data is a combination of CY and FY, depending upon the jurisdiction reporting



Headline Measure #5: Percentage of Accreditation Related Strategic Recommendations Addressed



FY10 Performance Progress

FY08	FY09	FY10	FY11	FY12
20%	35%	55%	75%	100%

FY10		
Q1	Q2	Q3
35%	40%	45%



Headline Measure #6 EMS Cardiac Care

▪ Headline Measure Description

- Percentage of “STEMI” patients (those having a myocardial infarction) who are in the cardiac catheterization lab receiving balloon catheterization within 90 minutes
- Goal is 90% of the patients in STEMI incidents receive balloon catheterization within 90 minutes
- This involves joint patient care between MCFRS and the 4 hospitals in Montgomery County that have a cardiac catheterization lab (i.e., Suburban, Holy Cross, Shady Grove, and Washington Adventist)

	09Q4	10Q1	10Q2	10Q3
Percentage of Patients	100%	94%	83%	90.2%
Patient Totals	NA			41

Quarter 3 is the first quarter patient totals from all hospitals (Shady Grove Adventist, Washington Adventist, Holy Cross, and Suburban hospitals) where recorded



Overview of MCFRS Prevention Outreach Data Collection

MCFRS tracks prevention outreach efforts on an ongoing basis to track outreach interactions

Home Visit Outreach

	Prior to FY10	FY10
Home Visits	23,796	11,397
Smoke Alarms Installed	760	315
Batteries Installed	918	315

Web-Based Outreach

Internet Outreach Medium	FY09	FY10	Total
MCFRS Twitter	274	488	762
MCFRS Blog (Visits)	3,263	8,798	12,061
MCFRS Facebook	1,019	1,396	2,415
MCFRS Blog Posts	50	106	156
MCFRS Blog Talk Radio (listens)	3,966	5,087	9,053
MCFRS Pub Ed You Tube (Views)	2,258	2,607	4,865



Tracking Responsive and Sustainable Leadership: MCFRS Quarterly Updates

Effective and Productive Use of Workforce/Resources

Overtime Use in Hours						
Department/ Office (# Authorized Positions)	FY10-Q3	FY10-Q2		FY09-Q3		Overtime Hours Per Approved Position
	Current quarter	Previous quarter	% change from previous quarter	Same quarter one year ago	% change from one year ago	
(1306)	66,767	79,920	-16.5%	55,355	20.6%	51.1

Overtime Use in Dollars						
Department/ Office (# Authorized Positions)	FY10-Q3	FY10-Q2		FY09-Q3		Overtime Dollars Per Approved Position
	Current quarter	Previous quarter	% change from previous quarter	Same quarter one year ago	% change from one year ago	
(1306)	\$3,296,447	\$3,990,274	-17.4%	\$2,765,487	19.2%	\$2,524.08

Workforce Utilization

Workforce utilization will measure for each department the percent of the time employees were available to perform job-related functions. Items such as annual, sick, and administrative leave will count as hours where employees are unavailable to perform job-related functions. Overtime and comp leave count as additions to time available.



Tracking Responsive and Sustainable Leadership: MCFRS Quarterly Updates

Internal Controls and Risk Management

Risk Management Tracking							
Approved personnel	Workers' Compensation Costs This Quarter		Workers' Compensation Costs Last Quarter		Percent change from last quarter		Cost per position (cost plus reserves)
	Total cost paid	Remaining reserves	Total cost paid	Remaining reserves	Total cost paid	Remaining reserves	
(1306)	\$1,895,964	\$10,546,784	\$2,077,574	\$10,856,124	-8.7%	-2.8%	\$9,527.37

Environmental Stewardship

Summary of Print and Mail Expenditures, FY10-Q3		
FY10 Original Budget	Revised FY10 Print/Mail Budget	Projected End of Year Balance
\$202,635	\$176,939	\$72,914



NIST Study and Update on Four Person Staffing

National Institute of Standards and Technology (NIST) Report on Residential Fireground Field Experiments Overview

- **Purpose:** Investigate and validate the effect of varying crew size, first apparatus arrival time, and response time on firefighter safety, overall task completions, and interior residential tenability
- **Participants:** MCFRS and Fairfax County
- **Location:** Montgomery County Public Safety Training Academy
- **Scope:** 60 laboratory and residential fireground experiments using 2,000 sq ft two-story residential structure
- **Key Variables:** Arrival time, staffing, task completion, thermal and toxic levels within structure

Each test timed the crews completion of 22 fireground tasks as well as measure the effect on occupant and firefighter safety



NIST Study: Primary Research Questions

- How do crew size and stagger affect overall start to completion response timing?
- How do crew size and stagger affect the timings of task initiation, task duration, and task completion for each of the 22 critical fireground tasks?
- How does crew size affect elapsed times to achieve three critical events:
 - Entry into structure
 - Water on Fire
 - Ventilation through windows
- How does the elapsed time to achieve the national standard of assembling 15 firefighters at the scene vary between crew sizes of four and five?



NIST Study: Primary Research Findings

2-Person Close Stagger	
Milestone Tasks	Time from ignition (min : s)
Breached Door	8:44
Water On Fire	9:56
Upper Fire Window	13:01
Ground Non-fire Window	14:51
Upper Corner Window	17:55
Upper Front Door Window	19:55
Ground Fire Window	4:30
3-Person Close Stagger	
Milestone Tasks	Time from ignition (min : s)
Breached Door	7:48
Water On Fire	8:54
Upper Fire Window	11:26
Ground Non-fire Window	13:31
Upper Corner Window	15:54
Upper Front Door Window	17:58
Ground Fire Window	4:30

4-Person Close Stagger	
Milestone Tasks	Time from ignition (min : s)
Breached Door	7:46
Water On Fire	8:41
Upper Fire Window	9:23
Ground Non-fire Window	10:32
Upper Corner Window	11:46
Upper Front Door Window	13:45
Ground Fire Window	4:30
5-Person Close Stagger	
Milestone Tasks	Time from ignition (min : s)
Breached Door	7:35
Water On Fire	8:03
Upper Fire Window	10:11
Ground Non-fire Window	10:54
Upper Corner Window	12:31
Upper Front Door Window	12:47
Ground Fire Window	04:30

Four-person crews operation on a low-hazard structure fire completed all tasks on average in 7 minutes or 30% faster than two-person staffing and 5.1 minutes or 25% faster than three-person staffing



Impact of 4 Person Staffing In Montgomery County

MSFRS Identified Benefits of Four Person Staffing

- Increases firefighter and occupant safety
- Increases ALS response capacity
- Decrease in ALS response times
- Reductions as much as 10 to 20 percent in ALS response time in certain areas of the County
- Increase ALS response elasticity – On most ALS incidents (93%), only one paramedic required for patient care en route to hospital. This allows AFRA to go back in service quicker to provide continuity of coverage.
- Increase ALS response capability – Addition of 25 four-person AFRA engines has increased number of ALS response units from 17 to 42 (147% increase)



Impact of 4 Person Staffing In Montgomery County

MCFRS Identified Four Person Staffing Response Data

- ALS response times decreased by 8% during phase-in of 4-person AFRA engines
- Average ALS response times for CY2009 was 9 minutes 36 seconds; for CY2006 was 10 minutes 26 seconds
- Rural areas realized greater improvements, such as Laytonsville Station 17's area with a 21% decrease in ALS response times
- Areas without a first-due medic unit realized improvements as well, such as Silver Spring (Four Corners) Station 16 with a 15% decrease in ALS response times

According to a joint study conducted by the International Association of Fire Fighters and Johns Hopkins University, in U.S. cities with populations over 150,000, jurisdictions operating with crews less than four had firefighter injury rates nearly twice of those operating with four-person crews



Wrap-Up

- Follow-Up Items

